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AUTHOR Sullivan, Michael F.
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ABSTRACT

This paper describes METN (Maryland Education Technology Network), a network which is designed to assist Maryland schools in developing instructional computing, while also working to provide equitable access to computers to all Maryland students. The process of creating the system is described, and a number of lessons learned from its development are detailed. Finally, an editor's update describes current features of the system which have been introduced only recently. (EW)

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METN: Networking in Maryland

Michael F. Sullivan

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The Maryland Education Technology Network (METN) began as a response to local school districts' requests for assistance from the State Department of Education in the area of instructional computing. At that time Maryland was not unlike most states in that various districts had adopted different philosophies of instructional computing, often fundamentally at odds with one another. At that time even the selection of a particular brand name was a statement of belief.

One difference between Maryland and most other reasonably affluent states was that Maryland schools had not purchased large numbers of computers during this earliest phase of the computer revolution, and consequently, most districts did not feel a great need to defend their particular philosophy or brand name choice. The districts were willing to consider novel and untried approaches to the instructional computing issue.

When the State Superintendent of Schools, David W. Hornbeck, appointed a task force to examine the issue of instructional computing, he insisted only that it focus on the state's role in providing for equity for all of Maryland's students. Equity was a critical factor because even in the early 1980s there were extreme differences based on wealth in the availability of computers among districts.

This task force made the usual statements about computer literacy and teacher certification, but it also emphasized that the state should accept responsibility for designing a fair and equitable approach to instructional computing for the entire state. Hence METN was born.

The assignment to create METN went to the Division of Instructional Television. In the Department of Education, MITV, as it was known, was the division that had coordinated all video services to schools and had a history of providing quality services on an equitable basis. MITV also had a philosophy that communication was the keystone of education. This philosophy had resulted in numerous projects extending far beyond the traditional ITV service.

Because of this beginning, METN from its start was a project based mor
communications than on computing. While the power of computing cer
was not lost on those assigned to the project, they paid much attention to
limitations of the personal computer in an instructional setting. These
devices, which were so helpful in finding answers, were of little apparen
value in learning procedures or developing skills; and they were of
absolutely no use in supporting communications. Often computers were
in such a way as to inhibit communications. (I will resist the temptation
tell about the teacher who held the floppy disk up to the light.)

Certainly it was well known that the computer was potentially a powerfu
communications device and the technology existed to make it function in
meaningful ways, but both education and industry seemed content to use
computers as very expensive drill and practice workbooks. It became the
goal of METN to create a new philosophy of instructional computing based
on communications, economy, and equity.

The first step in this process was to define the system that would support such an ambitious undertaking. METN developed an extensive document which, among other things, called for local area networks in classrooms with 512K student workstations operating in a UNIX® environment. This occurred in an age when many were questioning if public education would give up 16K machines for the new 64K machines!

The LAN and sophisticated workstations were not the object of METN—they were the means. One other critical objective was a communications capacity that would permit each student to hear, see, and exchange information throughout the world. Of course, the overriding concern for equity and economy did not permit dependence on modems and telephone lines, so the specification called for a system of point-to-multipoint communications using the broadcast capacity of Maryland Public Television.

The process of implementing METN was most difficult. Computer manufacturers had little interest in developing this (then) extremely powerful workstation for an industry satisfied with existing products. Communications firms were unable to develop needed products at rates education could afford.

The answer was found in compromise. The first installation consisted of 128K computers connected to an external LAN. Communication was modem-based. The system was bulky, difficult to operate, and too expensive for most districts. In other words, it did not address the basic criteria of the project. It did, however, make a statement. It said that educators were serious about exploring new technology. It said that more powerful technology had a place in the classroom, and that the state was serious about driving industry to offer education the same sophistication it was offering to the private sector.

By the end of 1986, METN supported classrooms with 512K workstations, built-in LANs, and a UNIX-like operating system. Software and other digital information had been broadcast over the television signal. Finance plans had been developed to make it possible for even the poorest district to participate in the network.

Our lessons in METN taught us many things:

1. To bring about meaningful change you must challenge current wisdom.

2. Technology is capable of nearly anything.

3. It is better to do something poorly than to do nothing at all.

4. Educators can be brought together to work for a common good.

Today Maryland is one member of a multistate and multiprovince consortium that has goals similar to those of METN. The Software Communications Service (SCS) brings together a large number of educators who see an unfulfilled promise in educational technology. METN should soon be the beneficiary of a large-scale movement to improve education through the most sophisticated forms of communication and computing available.

Editor's Update

Under Mike Sullivan, former assistant state superintendent and director of the METN project, METN's goals emphasized communications, which relied to some degree on the MITV capability of broadcasting coursework and facilitating data-base access. Discussions with the current director of METN, Dr. Frank Windsor, indicate that the METN project involves primarily 30 local area network configurations operated in 30 schools throughout the state. While METN has demonstrated the technical feasibility of broadcasting software programs to individual sites, it has not been economically feasible to broadcast large packages, especially to a limited number of sites. On the other hand, several METN sites have been using the local area networks for telecomputing, particularly to access on-line data bases such as Addison-Wesley's Einstein, whose predecessor—Express—was partially developed by a group in Queen Anne's County. This group is also experimenting with CD-ROM programs (particularly an "electronic encyclopedia") on the local area network.

In addition to those noted by Sullivan, several other factors contributed to the success of METN, including:

- Leaders at individual demonstration sites who took advantage of the policies and facilitating role of the state department (for example, by obtaining initial equipment on a loan basis from IBM and CEMCORP).
- Initial and expanded in-service training for district staff, including network operators and teachers.
- Demonstrations in naturalistic settings that were critical to the adoption of the program by other sites during the last six months (increasing the number of sites from fewer than 10 to 30).
- Initial cooperation and professional collaboration between METN staff, local staff, hardware vendors, and third-party software publishers.
- Opportunities and encouragement for experimentation with different configurations, approaches, and applications at the various sites.

Michael F. Sullivan

Mike Sullivan is currently senior regional education consultant with UNISYS Corporation. Prior to accepting this position, he was assistant state superintendent of schools in Maryland, where he was responsible for instructional technology, including the Maryland Educational Technology Network (METN).

Mr. Sullivan has worked as a teacher, school administrator, district supervisor, curriculum specialist, and university instructor at different times during his 20-year career in education. He practices his theories on his three children at home in Maryland.

3+4=7
NEWS

Section III: Community-Based Networks

Community-Based Networks

In this category are several examples of projects with local "grass roots" origins—projects initiated to answer a specific local communications challenge. These projects typically serve students and teachers more than administrators, enabling information flow among teachers and students in classes, on bulletin boards, or one-on-one. Many successful programs of this type are in operation throughout the country. This section offers a glimpse of the possibilities afforded by telecommunications solutions.

Robert Spielvogel discusses Learning Link, WNET's computer-based network of information services for educators. The project began as an attempt to fill the need for more efficient transfer of WNET's educational program schedule, and has grown to include a variety of community services. The present subscriber base is composed of schools within the WNET broadcast area. Soon, WNET will offer help to other public broadcasting channels and state departments of education to establish similar services in their own areas.

Al Rogers contends that telecommunications is an effective educational tool when it enables a task to be completed more easily and more efficiently on-line than off-line. The goal of the CMS School-Net program was to create an innovative language and communication skills program. (Among other things, when students communicate with one another on-line, they are naturally motivated to maximize their writing skills.) Initiated by the Teacher Education and Computer Center in San Diego, California, the program has continued to grow despite economic setbacks, and today incorporates more than 40 nodes in the United States, Puerto Rico, and Argentina.

Paul Levinson describes university courses conducted via computer teleconferencing. The Connect Ed program, a computer conference on the New Jersey Institute of Technology's EIES network, originated to meet the needs of students of the New School for Social Research in New York City. Connect Ed's locally originated "campus" is accessible to students all over the world, enabling otherwise isolated students to participate in an exciting selection of college courses.

Carl Durance and Shirley Fenton describe work on Waterloo MacJANET, a program designed to maximize the teaching of computer skills in a lab situation. This local area network provides solutions to problems of disk management and file storage, helping maximize use of teacher time. Set up to accommodate the needs of computer courses at the University of Waterloo in Canada, the MacJANET system is now in operation in many computer labs across the continent.